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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/977,399	10/16/2001	Tatsuya Kawahara	77661/57	3063

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EXAMINER

HODGE, ROBERT W

ART UNIT PAPER NUMBER

1746

DATE MAILED: 11/29/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/977,399

Applicant(s)

KAWAHARA ET AL.

Examiner

Robert Hodge

Art Unit

1746

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 October 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-39 is/are pending in the application.
- 4a) Of the above claim(s) 2-3, 6-9, 11-12, 14-15, 17-18, 20-21, 23-24, 26-28, 31-33, 35-36 and 38-39 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,4,5,10,13,16,19,22,25,29,30,34 and 37 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 10/16/01 & 4/7/03.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Specification

1. The disclosure is objected to because of the following informalities: In paragraph 75 page 18 lines 3 and 4 the use of the word "power" is inappropriate and should be replaced with --powder--.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.
3. Claims 1 and 4-5 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.
4. The use of the phrase "is increased in strength" is unclear as to how the layer is increased in strength since there is no recitation of a reference that the layer would be stronger than. Due to the unclearness of the above recitation the examiner cannot form a search strategy and therefore it is the examiners view that any prior art that discloses the other structural limitations of the claims will read on the claims as so recited.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

((b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

6. The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

7. Claims 1, 4-5, 10, 22, 25, 29-30, 34 and 37 are rejected under 35 U.S.C. 102(b) as being unpatentable by Kato JP 10261421 (U.S. Patent No. 6,127,059 is used as the English translation) hereinafter referred to as Kato.

8. In reference to claims 1 and 4-5 Kato teaches a diffusion layer with at least a base layer (abstract lines 1-2) that has a water-repellent layer (abstract line 15, column 3, line 13 and column 4 line 15 et seq).

9. In reference to claim 10 Kato teaches the above structural features as well as “a carbonized yarn of woven fabric [column 3, lines 39-42 and lines 46-47], and a carbonized binder impregnated into the yarn [column 4, lines 15 et seq]”. It is inherent

that a binder that is impregnated into a woven yarn would connect the filaments of the yarn together.

10. In reference to claim 22 Kato teaches a non woven base layer (column 6, lines 51 and 66) with a synthetic resin binder impregnated into it (column 5, lines 50-52), it being pressed (column 5, line 9) and carbonized (column 3, lines 39-42 and lines 46-47).

11. In reference to claim 25 Kato teaches the above structural features as well as a base layer having opposite surfaces (column 6, line 34 and claim 6), that the water-repellent layer is a mixture of carbon and synthetic resin (column 4, lines 15-16 and claim 4), and that the water-repellent layer is multi layered (column 1, lines 15 et seq). It is inherent that multiple layers would have different adhesive properties especially if they are applied to the substrate under different conditions such as disclosed by Kato (column 1, lines 29-31 or column 6 lines 4-8).

12. In reference to claims 29-30 Kato teaches the above structural features as well as the use of two kinds of binders (column 4, lines 50-56). The examiner notes that of the materials disclosed by Kato, the order of use determines which material will have a higher rigidness. The examiner notes that the use of the phraseology "higher rigidness" is relative to the materials at hand and can change with any reference. And since there is no recitation in claim 30 what a first or second material would be the Kato reference reads on the claim. The examiner further notes that all of the materials listed in the Kato reference have some sort of adhesive properties.

13. In reference to claims 34 and 37 Kato teaches all of the above structural features as well as solidifying the carbon and synthetic resin mixture (column 5, lines 9-10) and the presence of filaments (column 5, line 46).
14. The examiner notes that claims 34 and 37 appear to be product-by-process claims. "Product-by-process claims are not limited to the manipulations of the recited steps, only the structure implied by the steps". See MPEP § 2113. Therefore because all of the structure recited in claims 34 and 37 are present in the Kato reference, claims 34 and 37 are included in the above 102(b) rejection.
15. Claims 13 and 16 are rejected under 35 U.S.C. 102(e) as being unpatentable by Campbell et al. U.S. Patent No. 5,863,673 hereinafter referred to as Campbell et al.
16. In reference to claim 13 Campbell et al. teaches a diffusion layer with at least a base layer that is made from a carbonized yarn woven fabric (column 2, lines 19-26), a conductive synthetic resin binder impregnated into the yarn (column 2, lines 53-54) and that the binder is not carbonized and is solidified (column 3, lines 1-2 and column 4, lines 13-21). It is inherent that a binder that is impregnated into a woven yarn would connect the filaments of the yarn together.
17. In reference to claim 16 Campbell et al. teaches the above structural features as well as the base layer having water-repellent characteristics (column 3, lines 65-67 and column 4, lines 1-7) and the use of a non-conductive synthetic resin binder (column 6, line 67, column 7, lines 1-3 and Table 2).
18. Claim 19 is rejected under 35 U.S.C. 102(e) as being unpatentable by Beattie et al U.S Patent No. 6,667,127 hereinafter referred to as Beattie et al.

19. Beattie et al. teaches a diffusion layer with at least a base layer that is made from a non-woven carbon paper made from carbon fibers (column 6, lines 56-57), a synthetic carbonized resin binder that is non-uniformly impregnated therein (column 6, lines 63-67, column 8, lines 66-67, column 8, line 51 and column 9, line 31), that the layers on the base layer would be differing in the amount binder used (column 9, lines 56-64 and claim 33) and a rigid portion of the base layer would be present (column 9, lines 61-62 and column 11, line 13).

Response to Amendment

20. Applicants submits that Claims 1-39 are pending and has responded to the requirement for restriction by electing claim group 1, i.e., claims 1, 4, 5, 10, 13, 16, 19, 22, 25, 29, 30, 34 and 37, which are drawn to a diffusion layer. Because applicants did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

21. The above elected claims have been examined as set forth in the above office action.

Conclusion

22. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

- a. U.S. Patent No. 6,627,035 to Fan et al. teaches a method of producing a gas diffusion electrode from a carbon cloth substrate that is carbonized and water-repellent
- b. U.S. Patent No. 6,713,424 to Stumper et al. teaches a method of manufacturing a fluid diffusion layer made of an electrically conductive material such as carbon paper/cloth and the use of methylcellulose to form pores
- c. U.S. Patent No. 6,605,381 to Rosenmayer teaches a multilayered gas diffusion layer made from carbon fiber paper with a PTFE layer that is hydrophobic

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Robert Hodge whose telephone number is (571) 272-2097. The examiner can normally be reached on 8:00am - 4:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Barr can be reached on (571) 272-1414. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

RWH 11-11-04

A handwritten signature in black ink, appearing to read 'Michael Barr', with a stylized flourish extending from the end.

MICHAEL BARR
SUPERVISORY PATENT EXAMINER